

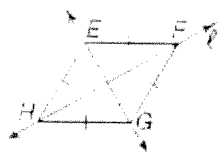
1. Which transformation turns every point of the preimage through a specified angle and direction about a fixed point?

F reflection      ☒ G rotation      H translation      J dilation

2. Given  $B(-4, -6)$ , under which reflection is  $B'(4, 6)$ ?

A reflected in the  $x$ -axis      ☒ C reflected in the origin  
B reflected in the  $y$ -axis      D reflected in the line  $y = x$

3. Name the image of  $\overline{EF}$  under reflection in line  $\ell$ .



☒ F  $\overline{FG}$       G  $\overline{HG}$       H  $\overline{EH}$       J  $\overline{FE}$

4. How many lines of symmetry does a regular decagon have?

A 0      B 2      C 5      ☒ D 10

5. The point  $I(-4, -1)$  is rotated  $90^\circ$  about the origin. What is the image of  $I$ ?

F  $I'(4, -1)$       G  $I'(4, -1)$       ☒ H  $I'(1, -4)$       J  $I'(-1, -4)$

6. What type of dilation occurs with a scale factor of  $\frac{1}{4}$ ?

F enlargement      H congruence transformation  
☒ G reduction      J glide reflection

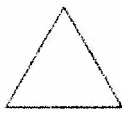
7. Which of the following figures shows a translation?



8. Name the image of  $Z(-13, -5)$  along the translation  $(x, y) \rightarrow (x + 4, y + 3)$ .

$(-9, -2)$

9. How many lines of symmetry are in the figure below?



A 0

B 1

C 2

D 3

10. Sue scans a 4-inch picture into her computer. She stretches the picture's length to 10 inches. Find the scale factor she used.

F 6

G  $\frac{5}{2}$

H 2

J  $\frac{2}{5}$

11. Find the reflection of the point  $A(6, -1)$  in the  $x$ -axis.

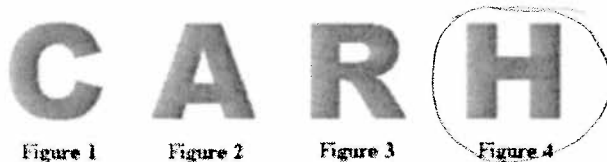
F  $A'(6, -1)$

G  $A'(-6, 1)$

H  $A'(6, 1)$

J  $A'(-1, 6)$

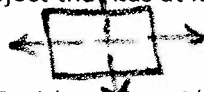
12. Which of the following letters have rotational symmetry and or point symmetry or neither?



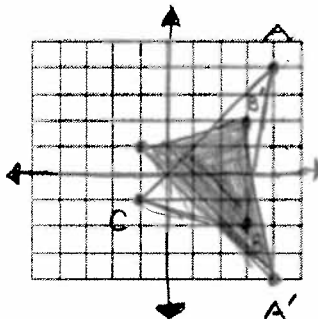
neither neither neither both

### Free Response

13. Name an object that has at least two lines of symmetry. Describe the lines of symmetry in the object.



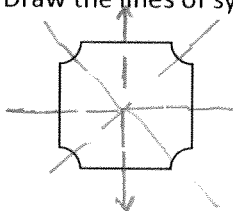
14. Graph  $\triangle ABC$  with vertices  $A(4,4)$ ,  $B(3,-2)$ , and  $C(-1,-1)$ . Then graph the image of  $\triangle ABC$  reflected across the  $x$ -axis.



15. Write the mapping that translates  $W(9, 3)$  to  $W'(2, -2)$ ?

$$(x, y) \rightarrow (x-7, y-5)$$

16. Draw the lines of symmetry.



17. If
- $AB$
- is 7 and
- $A'B' = 14$
- , is the dilation an
- enlargement*
- ,
- reduction*
- , or
- congruence transformation*
- ?

enlargement

18. Find the measure of the image of
- $\overline{AB}$
- if
- $AB = 9$
- under a dilation with scale factor of
- $\frac{8}{9}$
- .

$$AB = 8$$

19. Given
- $\triangle ABC$
- with vertices
- $A(1, 0)$
- ,
- $B(6, -7)$
- ,
- $C(0, -4)$
- . Find the coordinates of the vertices of the triangle along the translation
- $(x, y) \rightarrow (x, y - 4)$
- .

$$A'(1, -4) \quad B'(6, -11) \quad C'(0, -8)$$

20. Which transformations are isometries? Which transformations are not isometries? Explain.

Preserves distance { translations  
reflections  
rotations

dilations  
(does not preserve distance)